

Remarks

Claims 14-25 are presented for reconsideration, with 14 and 20 being the independent claims. Claims 14, 15, 18, 20, 24, and 25 are sought to be amended. Applicant reserves the right to prosecute claims that are similar or broader than the amended claims in the future.

Based on the above amendments and following remarks, Applicant respectfully requests that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Objection to the Claims

The Examiner objected to Claims 15, 24, and 25. Although Applicant disagrees with the objections, the claims were amended as shown above to expedite prosecution of the claims to issue. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the objections.

Rejections under 35 U.S.C. § 103(a)

Claims 14-16, 18, 20, 24, and 25 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 5,428,445 to Holzapfel ("Holzapfel") in view of U.S. Patent No. 5,114,236 to Matsugu et al. ("Matsugu"). Claims 17, 19, and 21-23 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Holzapfel in view of Matsugu, and in further view of U.S. Patent No. 4,821,277 to Alphonse et al. ("Alphonse"). Applicant respectfully traverses these rejections.

Claims 14 and 20 recite features that distinguish over the applied references. For example, claims 14 and 20 recite a system and method that measures a position of a pattern on a substrate before a subsequent pattern is exposed by (a) exposing a target alignment area associated with the current pattern, (b) using combined coherent beams of light diffracted by the target area to determine a position of the target alignment area before the next exposure and to produce a control signal related thereto, and (c) using the

control signal to position the substrate to properly align the substrate to expose a subsequent pattern.

Holzapfel teaches an encoder or general position measuring device, having no specific application, that reflects signals from gratings to generate reference pulses, where a number of detected reference pulses indicates a position. Holzapfel teaches the use of LED's that produce incoherent light and multiple gratings or a single grating with continuously variable pitch to generate very narrow reference pulses, which are collected with multiple detectors and used in combination to determine position. There is no teaching or suggestion in Holzapfel that the position measuring is performed to measure a position of a current pattern on a substrate before a next exposure of a subsequent pattern through (a) directing superluminescent light onto a target alignment area associated with the current pattern, (b) using combined coherent beams of light diffracted by the target alignment area to determine a position of the target area before the next exposure and to produce a control signal, and (c) using the control signal to position the substrate to properly align the substrate to receive the subsequent pattern before the next exposure, as recited in claims 14 and 20.

Matsugu teaches an alignment head 6 including a light source 10 that projects light through a collimating and projecting lens 11 and off of mirror 12 onto alignment marks 3a and 4a. Diffracted light from alignment marks 3a and 4a is received through mirror 12 onto a light receiving surface 9 of a detector 8. The light source 10 and detector 8 are on two different surfaces of alignment head 6. Matsugu does not teach or suggest a position measurement technique that relies on the recombination of orders of diffracted light from a target, as recited in claims 14 and 20, but rather a position measuring technique that relies on the positions of the orders of diffracted light received by a sensor without recombination. Thus, Matsugu does not cure the deficiencies of Holzapfel because there is no teaching or suggestion in Matsugu that the position measuring is performed to measure a position of a current pattern on a substrate before a next exposure of a subsequent pattern through (a) directing superluminescent light onto a target alignment area associated with the current pattern, (b) using combined coherent beams of light diffracted by the target alignment area to determine a position of the substrate before the next exposure and to produce a control signal, and (c) using the

control signal to position the substrate to properly align the substrate to receive the subsequent pattern before the next exposure, as recited in claims 14 and 20. Therefore, the Examiner cannot establish a prima facie case of obviousness using Holzapfel and Matsugu for claims 14 and 20.

Alphonse teaches a super-luminescent diode and its structure. Alphonse is not used to teach or suggest, nor does it teach or suggest, at least these features absent from the primary references discussed above. Therefore, Alphonse does not cure the deficiencies found in Holzapfel and Matsugu. Hence, the Examiner cannot establish a prima facie case of obviousness using Holzapfel, Matsugu, and Alphonse for claims 14 and 20.

None of the applied references, either alone or in combination, teach or suggest a system and method that measures a position of a current pattern on a substrate before a next exposure of a subsequent pattern by (a) directing superluminescent light onto a target alignment area associated with the current pattern, (b) using light diffracted by the target area of the current pattern or the substrate to determine a position of the substrate before the next exposure and to produce a control signal, and (c) using the control signal to position the substrate to properly align the substrate to receive the subsequent pattern before the next exposure. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 14 and 20 over the applied references. Also, at least based on their respective dependencies to claims 14 and 20, claims 15-19 and 21-25 should be found allowable over the applied references.

Conclusion

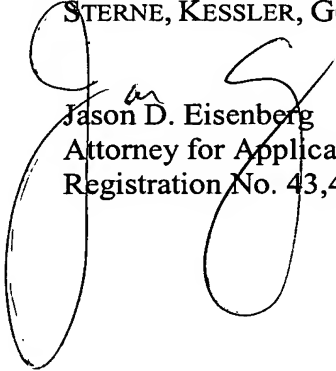
All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicant believes that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will

expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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